

FEDERALLY - SUPPORTED RESEARCH IN AGRICULTURE
AT LAND GRANT COLLEGES AND UNIVERSITIES AND
STATE EXPERIMENT STATIONS

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Federal supported research in agriculture has been conducted at land-grant colleges and universities throughout the United States for many years. It was launched with the passage of the Hatch Act in 1887 and has been expanded by the provisions of several supplementary legislative acts in the years since. The following is a chronological report of the legislative basis for such research.

The Hatch Act of 1887

The Hatch Act of 1887 provided for annual appropriations of \$15,000 to each state to be used for agricultural research. It also authorized the establishment of Agricultural Experiment Stations at land-grant colleges, providing the structure for federal-state cooperation in agricultural research. The Experiment Stations were assigned "The object and duty -- to conduct original researches or verify experiments bearing directly on the agricultural industry of the U.S." Use of Hatch funds was permitted for "paying the necessary expenses of conducting investigations and experiments and printing and distributing the results."

The responsibility for effective use of the funds was left largely to the individual states. However, the Secretary of Agriculture was assigned the duty of indicating "from time to time" lines of inquiry that seemed most important to him, and to furnish such advice and assistance as would best

1/ Much of the information contained in this discussion is supplemented in State Agricultural Experiment Stations, a History of Research Policy and Procedure, Miscellaneous Pub. 904 Cooperative State Experiment Station Service, USDA, Washington, May 1962. Pages 217-235 contain the basic legislation concerned.

promote the purpose of the act. The states also were given primary responsibility for providing the necessary physical facilities. Out of the first annual appropriation, however, up to 20 per cent could be used for the erection, enlargement or repair of buildings necessary for carrying out the work of the station. In succeeding years, states were permitted to spend up to 5 per cent of their annual appropriation for this purpose.

Individual states were given considerable freedom in deciding upon the specific research to be undertaken under the Hatch Act. The states were required to submit a detailed annual report of their operations from Hatch Act funds to the Governor of the state or territory, with copies sent to the U.S. Secretary of Agriculture and the U.S. Secretary of the Treasury. This report, which included a statement of receipts and expenditures, was used to determine if the individual state or territory was meeting the provisions of the legislation.

These provisions of the Hatch Act of 1887 provided the guidelines and the funds for federally supported research in agriculture at Experiment Stations until 1907.

The Adams Act

The Adams Act, passed in 1906, provided additional federal funds for agricultural research at State Experiment Stations. Specifically, it authorized up to \$15,000 annually in additional funds for each state and territory, bringing the combined total to \$30,000 per year under the Hatch and Adams Acts. In general, Adams Act funds could be used in the same ways as Hatch funds. An exception was that no provision was made for using Adams funds for printing and distributing research results. As a result costs of publication were paid from Hatch or State appropriations even when the research was financed by

Adams Act funds.

The Purnell Act

The next major change in the status of federally supported agricultural research at land-grant colleges and universities came in 1925 with passage of the Purnell Act.

The Purnell Act provided a substantial increase in federal funds available to State Experiment Stations. It authorized an additional \$60,000 per year for each State and Territory, raising the total annual allocation per state to \$90,000. The provisions of the Purnell Act were essentially the same as those of the two preceding acts, although the kind of research authorized was spelled out in more detail. Funds could be used for investigations or experiments -- "bearing directly on the production, manufacture, use, distribution and marketing of agricultural products -- and such economic and sociological investigations as have for their purpose the development and improvement of the rural home and rural life." Purnell funds could also be used for printing and disseminating research results. Up to 10 per cent of the appropriations under this act could be used for the construction and maintenance of buildings or for purchase or rental of land.

As in the case of the Hatch Act, individual states were given considerable latitude in the choice of specific research to be undertaken under the Adams and Purnell Acts. States were required to submit a detailed annual report of their operations to the Secretary of Agriculture and the Secretary of the Treasury of the United States.

The Bankhead - Jones Act

The Bankhead-Jones Act, passed in 1935, provided additional support for agricultural research at land-grant colleges and universities. It authorized

the appropriation of \$1,000,000 for the initial fiscal year, to be increased to \$5,000,000 by the fifth year and continuing at that level. Specifically the act authorized, "research relating to the improvement of the quality of, and the development of new and extended use and markets for agricultural commodities and by-products and manufactures thereof; and research relating to the conservation, development and use of land and water resource for agricultural purposes." Money available from this legislation could also be used for the purchase or rental of land, the construction of buildings, for equipment and maintenance and for printing and dissemination of research results.

Bankhead-Jones funds were not for the exclusive allocation to states and territories. Forty per cent of the appropriation was designated for use by the Department of Agriculture, with half of this amount to be used to establish and maintain research laboratories and to finance research at these laboratories.

The remaining 60 per cent was designated for allocation to the states, territories and Puerto Rico. This amount was allocated in the proportion which the rural population of the state or territory (or Puerto Rico) was to the total rural population of these areas.

The Bankhead-Jones Act also provided two additional appropriations, not tied to research, which were to provide further general support to land-grant colleges. One sum of \$980,000 annually was designated for equal distribution among the states and Hawaii. The second appropriation of \$1,500,000 annually was allotted to each state and Hawaii in the proportion which their total populations were to the total population of all the states and the territory of Hawaii.

Bankhead-Jones funds for state allocation carried a restriction not present on Hatch, Adams or Purnell Act funds. This was the matching provision. Under this provision, federal funds would be provided only to the extent that individual states or territories (or Puerto Rico) made their own funds available for research or for research facilities.

The Research and Marketing Act of 1946 (Amendment to the Bankhead-Jones Act and the Agricultural Marketing Act of 1946)

In 1946 the Bankhead-Jones Act was amended in several important respects. At the same time the Agricultural Marketing Act of 1946 was also approved. Title I of this act represented an amendment to the existing Bankhead-Jones Act of 1935. Title II of the Act was designated as the "Agricultural Marketing Act of 1946." Title III of this act authorized the Secretary of Agriculture to establish a national advisory committee and appropriate related committees. Their function was to consult with and make recommendations to the Secretary of Agriculture and the Department of Agriculture relative to research and service work authorized by the act.

Title I - The Amendment to the Bankhead-Jones Act outlined the scope of research and service activities authorized in much more detail than the original act. It also provided a substantial increase in funds and authorized cooperative research between states (Regional research) for the first time. The initial increase authorized was \$2,500,000 annually but with provisions for increases to \$20,000,000 annually by 1951 and for subsequent years. Additional funds could be provided if Congress so deemed.

Up to 3 per cent of the annual appropriation could be used for administrative expenses. The remaining 97 per cent was allocated to the states, territories and Puerto Rico as follows:

- Twenty per cent was allocated equally.
- At least 52 per cent was allocated on the following basis:

- One-half in amounts that reflected the proportion that the rural population of the state, territory (or Puerto Rico) was of the total rural population of all states and territories.
- One-half in the proportion the farm population of individual states, territories (or Puerto Rico) was of the total farm population or the states and territories.
- Not more than twenty-five per cent could be allotted for cooperative research between two or more states, such research designated as "regional research."

There were three restrictions on use of the funds outlined above. One was a continuation of the matching provision initiated with the original Bankhead-Jones appropriations. The exception was that the allocation of funds for regional research did not require matching amounts from states. Another was a requirement that at least 20 per cent of the funds allotted to state experiment stations must be used for research projects in marketing.^{2/} The third restriction, applied to all research supported by the Act, provided for the prevention of duplication or unnecessary replication of work within the states or territories.

Two additional appropriations were authorized in Title I of the 1946 act. An annual appropriation of \$3,000,000 increasing to \$12,000,000 by 1951, was authorized for conducting research on the utilization of agricultural products. It authorized additional increases in funds for this purpose in subsequent years, if Congress deemed it necessary. This research was to be conducted by the Department of Agriculture or by contract with other individuals or organizations.

The other appropriation which amounted to \$1,500,000 annually increasing to \$6,000,000 by 1951 was authorized for cooperative research with state

^{2/} The wording of the act did not define specifically the scope of marketing research. In practice projects were approved on the basis that marketing begins at the point where a crop is harvested. In the case of livestock and livestock products, when ready for sale. This means post-harvest marketing problems were acceptable but not research on production practices before harvest.

agricultural experiment stations and other appropriate agencies. Funds for subsequent years were authorized at the \$6,000,000 level, plus any additional amounts Congress might deem necessary.

Title II - Title II of the 1946 act was designated as "The Agricultural Marketing Act of 1946". Its purpose was to promote a scientific approach to problems of marketing, transportation and distribution of agricultural products. In addition to research work in cooperation with state agricultural experiment stations, marketing educational and demonstrational work was authorized in cooperation with state agricultural extension services. Further, market information, inspection, regulatory work and other marketing service work was authorized in cooperation with state departments of agriculture.

The initial appropriation under Title II was for \$2,500,000 annually. This was to increase to \$20,000,000 annually by 1951 with additional funds provided for if Congress deemed them necessary. Funds were to be allocated by the Secretary of Agriculture as he saw appropriate to state departments of markets, state agricultural experiment stations and other appropriate agencies. Specific allotments were to go to the agency best equipped to conduct the specific project under consideration. Title II funds also carry matching provisions. They are allotted to a state agency only to the extent that the state agency makes its own funds available on a dollar for dollar basis for each marketing research, service or regulatory activity.

Act of 1955 Consolidating the Hatch Act and Laws Supplementary Thereto

It is important to recognize that each new legislative act relating to the appropriation of federal funds for the support of State Agricultural Experiment Stations was additive in its effect and did not substitute for previous legislation. Thus by 1951, each state, territory and Puerto Rico

was receiving annual allocations of \$90,000 from Hatch, Adams and Purnell Acts, a portion of the \$23,000,000 appropriation under the Bankhead-Jones Act and was also eligible for funds from the \$20,000,000 appropriation of the Agricultural Marketing Act of 1946. As a result, the total allocation for individual states was subject to varying conditions and restrictions as to its use, reflecting the different provisions of the various legislative acts.

This condition was improved by the "Act of 1955 Consolidating the Hatch Act and Laws Supplementary Thereto," referred to as the Hatch Act (revised). In effect, this act consolidated the appropriations of preceding legislation. It provided for allocation to each state an amount each year equal to and subject to the same requirements as that received from federal appropriations for the fiscal year 1955 ^{3/} This is therefore a constant amount except that if there is any reduction in the total appropriation from the 1955 level each state allocation is reduced by the same proportion as the total decrease. An exception is funds for regional research, which continue to be allotted for regional projects on the basis of recommendations by a committee of nine persons elected by the Directors of the State Agricultural Experiment Stations and approved by the Secretary of Agriculture. The amount of funds for regional research cannot exceed 25 per cent of the total appropriation.

The 1955 consolidation legislation also provided that any additional appropriations for state agricultural experiment station work would be allocated on the following basis:

- Twenty per cent equally to each state.

^{3/} In the event appropriations for a particular year fall below the 1955 level, individual state allocations will be reduced proportionately.

- Not less than 52 per cent allotted to states in the following manner:
 - one-half in the proportion that the rural population of the state is to the total rural population of the United States. 4/
 - one-half in the proportion that the farm population of the state is to the total farm population of the United States. 4/
- Not more than 24 per cent allotted to the states for cooperative (regional) research. These funds are to be used for cooperative regional projects recommended by a committee of nine persons elected by the Directors of the State Agricultural Experiment Stations and approved by the Secretary of Agriculture.
- Three per cent is authorized for use by the Secretary of Agriculture to administer the act.

Current Status of Federally Supported Agricultural Research in the U.S. and in Ohio

Under the provisions of the 1955 legislation, federal funds are presently allocated under the following conditions and restrictions.

- The first \$90,000 representing original Hatch, Adams and Purnell appropriations, does not carry a matching provision.
- Allocations in excess of \$90,000, exclusive of regional research funds, must be matched by state funds.
- Marketing research projects must be conducted with funds equal to:
 - Not less than 20 per cent of the 1955 Bankhead-Jones allocations, exclusive of regional funds (and the same percentage of regional research funds must also be expended on marketing research).
 - All of the 1955 allocation under the Agricultural Marketing Act of 1946.
 - Not less than 20 per cent of any additional appropriations received under the 1955 act.
- Funds may be used for actual research, for printing and disseminating results, administrative planning and direction, purchase and rental of land, the construction, purchase, alteration or repair of buildings, and contribute toward the retirement of certain employees subject to an Act approved March 4, 1940.
- Funds are allocated in accordance with the legislative provisions of the revised Hatch Act of 1955 (see pages 7-8).

4/ As determined by the last preceding decennial Census current when an additional sum is first appropriated.

- The Secretary of Agriculture, through the Cooperative State Research Service, approves research projects for the Secretary of Agriculture, although specific details in preparing the projects are left to the states. In approving research projects several criteria are used. An effort is made to avoid unnecessary duplication within and between states. Consideration is also given to the appropriateness and need of the problem to the area concerned, the institution, and to the project leader and his capabilities.
- The Secretary of Agriculture also, through the Cooperative State Research Service, checks on the expenditure of funds to see if they are used in keeping with the project to which they were assigned. This is achieved by inspection teams from the Cooperative State Research Service and from reports submitted annually by the states.
- Project inspectors from the Cooperative State Research Service:
 - Can disallow funds if improperly used, requiring their replacement with state funds.
 - Can permit reallocation of federal funds by the State Experiment Station Director that have been disallowed.
 - Cannot allocate federal funds to a state until state plans are approved.
 - Can suggest inter-departmental cooperation on projects, for purposes of coordination.

Funds available for agricultural research have increased rapidly since the passage of the Research and Marketing Act of 1946 (technically the amendment to the Bankhead-Jones Act 1935 and the Agricultural Marketing Act of 1946). In the 1961-62 fiscal year, federal grants to states for agricultural research totaled \$36 million. Ohio received \$880,000 from this total. For fiscal 1962-63 Ohio received approximately \$1,045,000. Currently Ohio ranks fourth in the amount of federal funds received for agricultural research, exceeded by Texas, North Carolina and Pennsylvania. Non-federal funds devoted to agricultural research amounted to \$126 million in the U.S. in fiscal 1961-62. The national ratio of non-federal to federal funds in fiscal 1961-62 was \$3.63 non-federal for each 1.00 federal. In Ohio the ratio was \$2.68 to 1.00 and the extremes range from \$0.76 to 1.00 up to a high of \$14.65 to 1.00.

Major developments since 1947 include the increase in emphasis on marketing research and an extension of cooperative regional research efforts. By law, not less than 20 per cent of the federal funds allocated to State Agricultural Experiment Stations for research must be devoted to marketing projects, exclusive of the \$90,000 Hatch, Adams and Purnell funds. For the 1962-63 fiscal year 24 per cent of Ohio's federal funds for agricultural research were allocated to marketing. Nationally, 22 per cent were used for marketing research. At the extremes some states are just meeting the minimum requirement of 20 per cent while for 1962 one state devoted 35 per cent of its federal allocation to marketing research. In 1963, Ohio had thirty-six marketing projects. Nineteen of these were concerned with the economics of marketing and were in the Department of Agricultural Economics at Ohio State University. Of the remaining seventeen, the Agricultural Economics Department was cooperating in only three.

Regional Research

Federal funds for regional research were first appropriated in 1946 under the amendment to the Bankhead-Jones act. However, regional research had its beginning several years earlier -- without federal support.

Limited examples of regional research efforts were reported as early as 1913 in the Southern States. In November 1923, State Experiment Station Directors discussed the idea of regional research in detail. Relatively little was done during the 1920's and early 1930's, although interest in regional research continued. The provision for regional laboratories under the Bankhead-Jones Act of 1935 provided some impetus to this area of work.

In the late 1930's researchers at several State Experiment Stations approached their directors and outlined some desirable features of regional

research. At the time, however, there was no federal appropriation for this purpose and no indication that such funds would become available. Directors I. B. Johnson of South Dakota and Noble Clark of Wisconsin were among those most interested in regional research.

As a result of this interest, three regional marketing research committees were organized in the North Central region -- in livestock, dairy, and poultry and eggs. They had no federal support and operated on funds allocated voluntarily by the twelve North Central Directors. The purpose of the committees was to meet regional needs that existed and to provide evidence of the expected advantages of cooperative regional research.

The livestock committee was highly successful and became the forerunner of all regional committees. The other two initial committees, dairy, poultry and eggs however were less successful in realizing productive research results. The success of the regional livestock committee, called the "Corn Belt Livestock Marketing Research Committee," perhaps can be attributed to (1) the administrative leadership of Director I. B. Johnson of South Dakota, and (2) the excellent efforts of the regional coordinator, Knute Bjorka, of the B.A.E. in Washington, who was dedicated to the success of the livestock committee and was instrumental in providing excellent leadership.

In November 1942, the committee published a bulletin, No. 365, "Marketing Livestock in the Corn Belt Region." This bulletin was the first real evidence of output from regional research and was used to "sell" the idea of regional research to legislative committees in Congress. This effort was headed by Director Noble Clark of Wisconsin.

Consideration of federal funds and enabling legislation for regional research were tabled during World War II. However, following World War II the Research and Marketing Act of 1946 did provide funds for regional research --

probably due in part to the results of the early effort by the Corn Belt Livestock Marketing Research Committee. The provision for regional research was opposed by some congressmen and was regarded skeptically by them in the immediate years that followed the passage of the Act. However in ensuing years, regional research results have earned a position of acceptance.

The Hatch Act (revised) of 1955 provides the present authority for regional research, as outlined on pages 7 - 8 of this report. The intent and purpose of regional research has been summarized as follows:^{5/}

1. To stimulate and facilitate inter-state cooperation on research of a regional and national character, both between Agricultural Experiment Stations and with the USDA.
2. To plan and coordinate research so as to avoid unnecessary duplication in research effort.
3. To organize regional technical committees consisting of state and federal representatives that will plan and coordinate work on regional problems.

The four regional designations are Northeast, North Central, Southern and Western. The Cooperative State Research Service is the authorized representative of the Secretary of Agriculture in the approval of all federal grant research projects conducted by state agricultural experiment stations. Coordination and planning of research supported by the Regional Research Fund is achieved by regular meetings of USDA administrators with the Committee of nine elected by the Directors of the State Experiment Stations, through the Cooperative State Research Service, and meetings of technical representatives who plan research projects with the assistance of regional coordinators for specific committees.

When the Regional Research Fund became available in 1947, it contained \$625,000 which was allotted to 25 cooperative regional projects. By 1960,

^{5/} State Agricultural Experiment Stations, A History of Research Policy and Procedure, Misc. Pub. 904, CSESS, USDA, Washington, May 1962, p. 196.

cumulative expenditures from all sources, including non-federal, for cooperative research had reached \$118 million. The regional research program had expanded to 198 projects. In 1960, \$5,878,036 from the federal regional research fund was spent for regional research activities. This was equal to only 34 per cent of the total expenditure for regional research, with 27 per cent coming from State Stations in the form of other federal-grant funds and 39 per cent represented by non-federal funds. Twelve per cent of the total funds available currently to State Experiment Stations are devoted to regional research. Regional research funds are allocated among regions on the basis of farm population. In the North Central region, 60 per cent of the available funds are divided equally among the states. The remaining 40 per cent is divided on a formula basis--half on the basis of farm income and the remainder on the basis of population.